

Remarks

I. Status of claims

Claims 1-12 are pending.

II. Objections to the drawings

FIG. 2A has been amended as requested by the Examiner. The Examiner's objections to the drawings now should be withdrawn.

III. Claim rejections under 35 U.S.C. § 103(a)

A. Claims 1-5 and 9-12

The Examiner has rejected claims 1-5 and 9-11 under 35 U.S.C. § 103(a) over Buescher (US 6,396,351) in view of North (US 6,118,829).

Claim 1

Claim 1 recites that a fiber optic receiver includes a substrate, a receiver optical sub-assembly (ROSA), an opto-electronic transducer, a preamplifier circuit, and a post-amplifier circuit. The opto-electronic transducer and the preamplifier circuit are incorporated within the ROSA. Both the ROSA and the post-amplifier circuit are mounted on the substrate. The inventive placement of the adjustable bandwidth amplifier outside the ROSA enables the analog electrical data signals generated by the opto-electronic transducer to be amplified and shaped properly for data recovery, while allowing the receiver to be housed within a package sized to fit within fiber optic communication devices with significant size constraints.

As explained in detail below, none of the cited references taken alone or in any permissible combination teaches or suggests the inventive fiber optic receiver now recited in claim 1.

Buescher discloses a preamplifier circuit for a photodetector. Beuscher fails to teach or suggest anything about a receiver that comprises a ROSA that incorporates an opto-electronic transducer and a preamplifier circuit, much less anything about a receiver that comprises such a ROSA mounted on a substrate and an adjustable bandwidth post-amplifier circuit mounted on the same substrate, as recited in claim 1.

North discloses two receiver circuit embodiments 200, 450 each of which includes a respective preamplifier 210, 454 and a respective mode selection circuit 240, 470 for adjusting the response bandwidth and input sensitivity of the preamplifier. North, however, does not teach or suggest anything about a ROSA that incorporates an opto-electronic transducer and a preamplifier circuit, much less anything about a receiver that comprises such a ROSA mounted on a substrate and an adjustable bandwidth post-amplifier circuit mounted on the same substrate, as recited in claim 1.

In sum, neither Buescher nor North teaches or suggests anything about a receiver that comprises a ROSA that incorporates an opto-electronic transducer and a preamplifier circuit, much less anything about a receiver that comprises such a ROSA mounted on a substrate and an adjustable bandwidth post-amplifier circuit mounted on the same substrate. Therefore, for at least this reason, the Examiner's rejection of claim 1 under 35 U.S.C. § 103(a) over Buescher in view of North should be withdrawn.

In his rejection, the Examiner has failed to address the features of claim 1 discussed above. If the Examiner persists in his rejection of claim 1 over Buescher in view of North, Applicant respectfully requests that the Examiner give due consideration to the points laid out above and explain where the feature of a ROSA mounted on a substrate and an adjustable bandwidth post-amplifier circuit mounted on the same substrate is taught or suggested in either Buescher or North.

In addition, the Examiner has asserted that:

Buescher disclosed ... an adjustable response preamplifier (32) circuit coupled to the opto-electronic transducer and operable to amplify an electrical data signal generated by the opto-electronic transducer. ... North discloses a post-amplifier that operates to adjust the bandwidth response and sensitivity of a communications receiver (e.g., col./line: 4/40-55). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the North linear amplifier in the Buescher preamplifier circuit to limit bandwidth response to only that required to obtain good pulse fidelity so that less of

the background noise spectrum is amplified and the input sensitivity can be kept correspondingly lower as disclosed in North (see col./line: 3/25-31).

Contrary to the Examiner's characterization, however, North does not disclose an adjustable bandwidth post-amplifier circuit coupled to an output of a preamplifier circuit. Instead, each of North's receiver embodiments includes an adjustable bandwidth preamplifier 210, 454 that is coupled directly to a respective opto-electronic transducer 24. At best, one of ordinary skill in the art at the time of the invention might have been led to replace Buescher's preamplifier with North's preamplifier. There is no teaching or suggestion in either reference, however, that would have led one of ordinary skill in the art at the time of the invention to connect North's preamplifier to an output Buescher's preamplifier to operate as a post-amplifier for Buescher's preamplifier. Thus, neither Buescher nor North provides any motivation for the combination proposed by the Examiner. Accordingly, for this additional reason, the Examiner's rejection of claim 1 under 35 U.S.C. § 103(a) over Buescher in view of North should be withdrawn.

Claims 9-12

Each of claims 2-5 and 9-12 incorporates the features of independent claim 1 and therefore is patentable for at least the same reasons explained above. Claims 2-5 and 9 also are patentable for the following additional reasons.

Claim 2 recites that the post-amplifier circuit comprises a switch for setting a bandwidth response of the post-amplifier circuit in response to a received data rate control signal. In North's receiver embodiments, the switches 230 and 474 set the bandwidth response of North's preamplifiers 210 and 454, respectively; these switches do not set the bandwidth response of a post-amplifier circuit coupled to an output of a preamplifier circuit that is coupled to an opto-electronic transducer, as recited in claim 2.

Claims 3 and 4 incorporate the features of claim 2 and therefore are patentable for at least the same reasons.

Claim 5 recites that the post-amplifier circuit comprises a voltage-variable capacitor. The Examiner has asserted that North's capacitor 222 is a voltage-variable capacitor. To the contrary, however, capacitor 222 is a standard passive capacitor with a fixed capacitance value.

Claim 9 recites that the post-amplifier comprises an input gain buffer coupled to the output of the preamplifier circuit. The Examiner has failed to address the features recited in claim 9. Perhaps this omission is due to the fact that neither Buescher nor North teaches or suggests a post-amplifier that includes an input gain buffer coupled to the output of the preamplifier circuit. Indeed, since the receivers described in Buescher and North contain preamplifiers and no post-amplifiers there is no motivation to include an input gain buffer as recited in claim 9.

B. Claims 6-8

The Examiner has rejected claims 6-8 under 35 U.S.C. § 103(a) over Buescher in view of North and Lee (US 6,362,911).

Each of claims 6-8 incorporates the features of independent claim 1. Lee does not make up for the failure of Buescher and North to teach or suggest anything about a receiver that comprises a ROSA that incorporates an opto-electronic transducer and a preamplifier circuit, much less anything about a receiver that comprises such a ROSA mounted on a substrate and an adjustable bandwidth post-amplifier circuit mounted on the same substrate. Therefore, claims 6-8 are patentable over Buescher in view of North and Lee for at least the same reasons explained above.

In addition, the Examiner has cited Lee for showing a "wide bandwidth signal (output of 12a) and low bandwidth signal (output of 12b) coupled to a multiplexer." Contrary to the Examiner's assertion, however, the output of 12a is not coupled to the multiplexer 16. Instead, the output of 12a is coupled to the positive terminal of the limiting amplifier 18. Moreover, in Lee's approach, only the wideband path is used to amplify the data; the low bandwidth path is used only to set a threshold voltage.

IV. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 50-1078.

Applicant : Miachel Robinson
Serial No. : 09/818,433
Filed : March 26, 2001
Page : 7 of 7

Attorney's Docket No.: 10003782-2
Amendment dated February 25, 2004
Reply to Office action dated December 5, 2003

Respectfully submitted,

Date: February 25, 2004



Edouard Garcia
Reg. No. 38,461
Telephone No.: (650) 631-6591

Please direct all correspondence to:

Agilent Technologies, Inc.
Intellectual Property Administration
P.O. Box 7599
Loveland, CO 80537-0599